

SFSCON

Project USAGE:

open data and solutions to
support environmental policies
implementation in cities

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deda.next www.dedanext.it



Green

Green policy strategies are focusing on renewable energy, conservation, biodiversity protection, the circular economy, and climate change mitigation and adaptation.

Social

There is a deep and urgent need for ensuring social cohesion and providing greater well-being for people irrespective of socio-economic status, gender, territory, ethnicity or any other identity, through decision-making processes that are participatory and legitimate.

triple transition

Digital

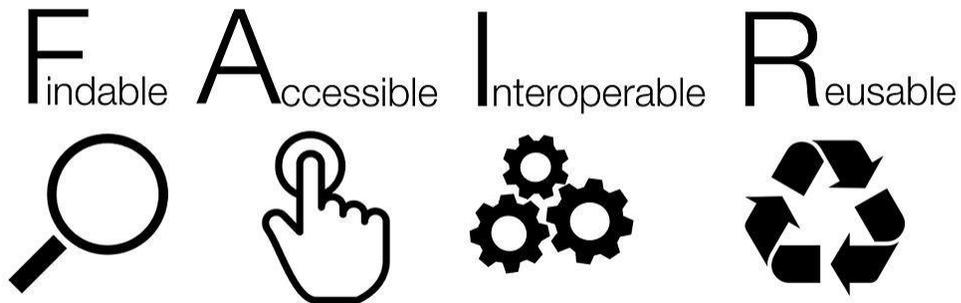
The digital transition, a key driver of economic transformation, encompasses the current rapid advancements in technology, the digitalisation and automation of industries, with a salient role artificial intelligence.

Meanwhile, the proliferation of connectivity leading to a more interconnected and data-driven world.

USAGE Project (Horizon Europe)

SFSCON

Urban data SpAce for Green dEal
aims to **provide open data and solutions** to
support environmental policies
implementation in cities,
on the basis of “FAIR” principles



1st main outcome

the creation of
data governance frameworks
for cities (local data spaces)



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Allegato tecnico

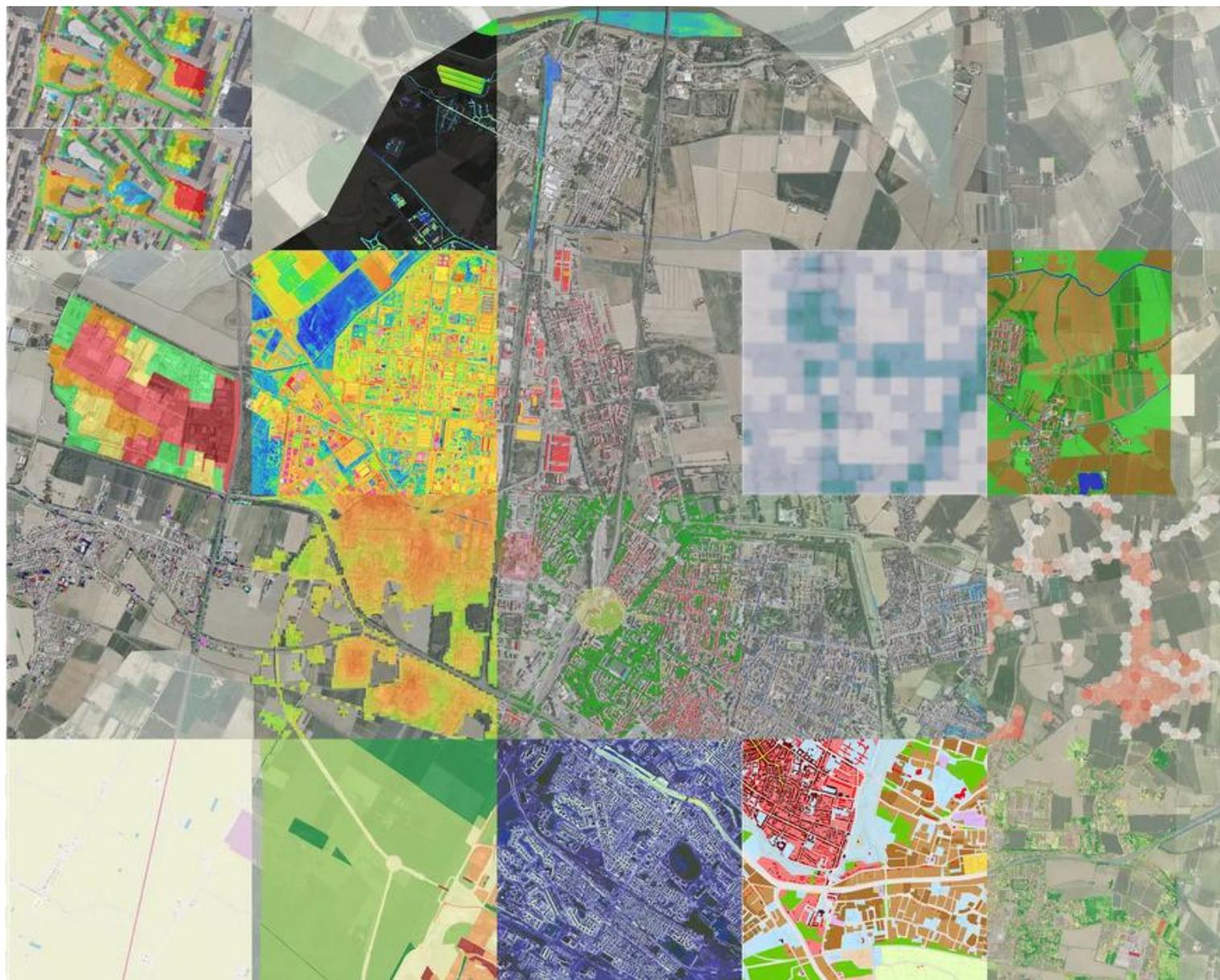
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d) Web service e API basati su standard aperti

La quarta modalità di interscambio dati prevista per il Data Space Ferrara è quella più in linea con le normative e le specifiche tecniche di livello nazionale, europeo e mondiale. Questa sezione contiene i riferimenti tecnici riguardanti le interfacce software, i protocolli, le operazioni, ecc. richiesti a livello di server o client per visualizzare, accedere e condividere i dati all'interno del Data Space urbano in oggetto. I dettagli di questi riferimenti tecnici si basano su specifiche ben note definite da ISO, CEN, OGC e altre organizzazioni di standardizzazione richiamate da direttive europee (per esempio, la Direttiva 2007/2/CE "INSPIRE").

2nd main outcome

the increase in availability,
quality and interoperability
of open datasets for
local policies development

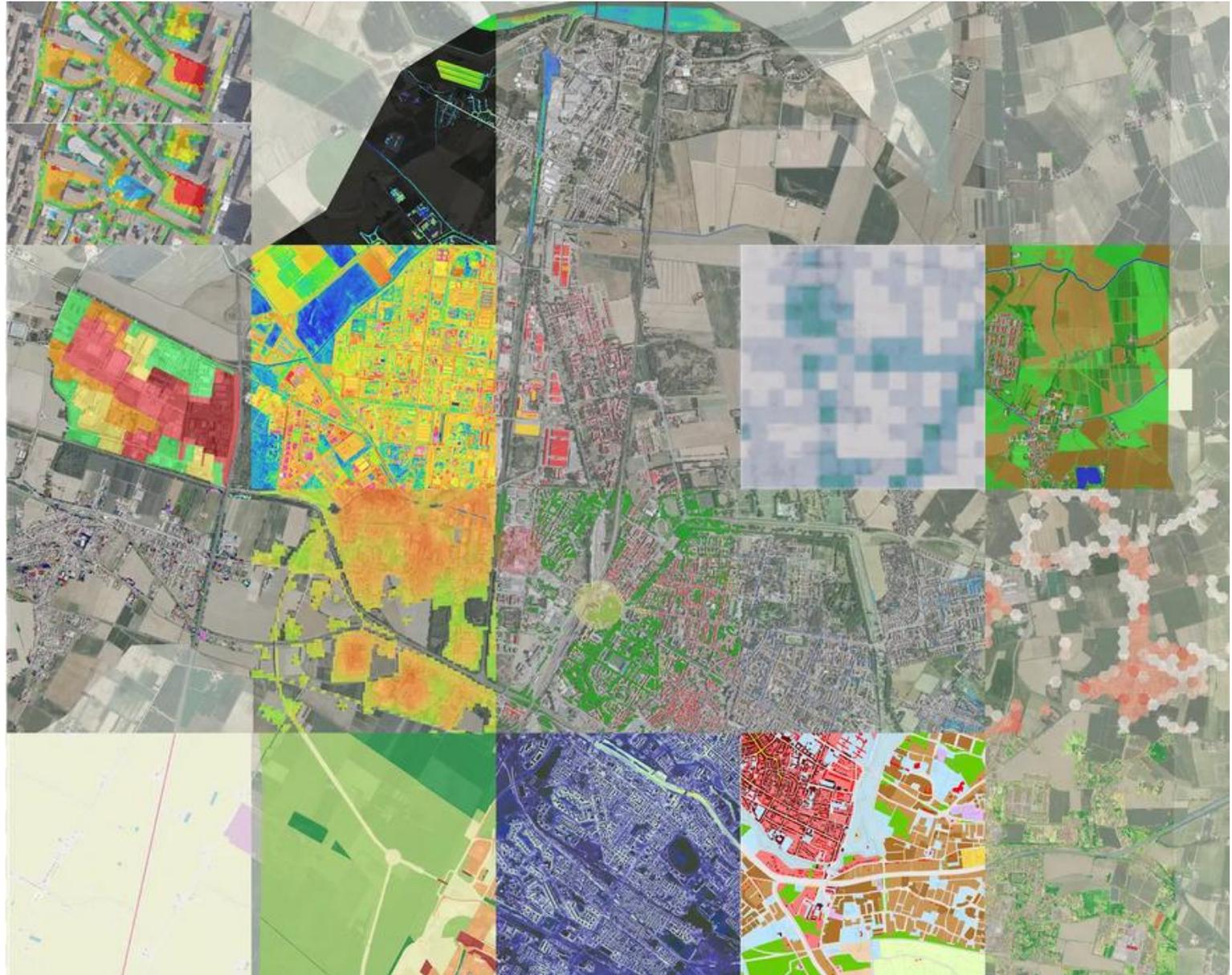


2nd main outcome

the increase in availability,
quality and interoperability
of open datasets for
local policies development

+200 (geo)datasets on
dati.comune.fe.it via OGC
standard services/formats

(including Citizen Science)



Thermal images from satellite (2013-2023)

example →

June '23

July '23

August '23

22nd

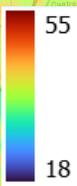
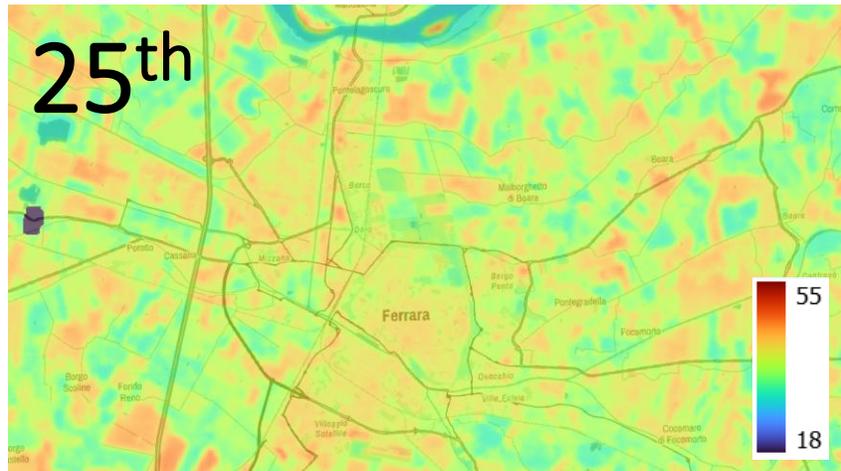
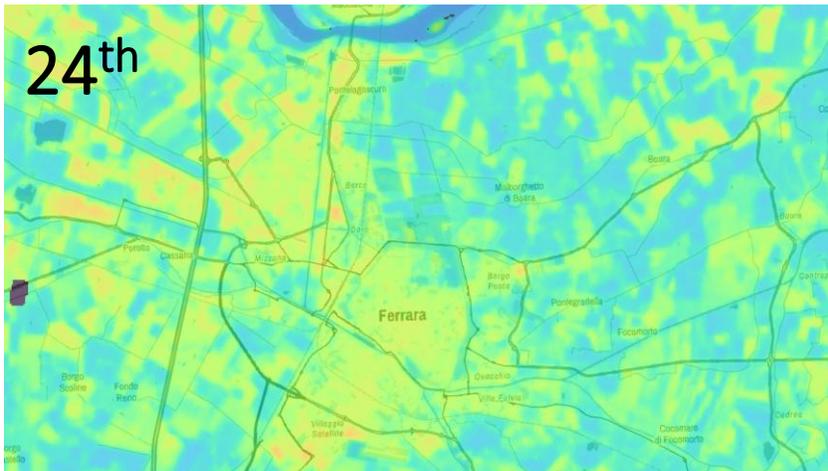
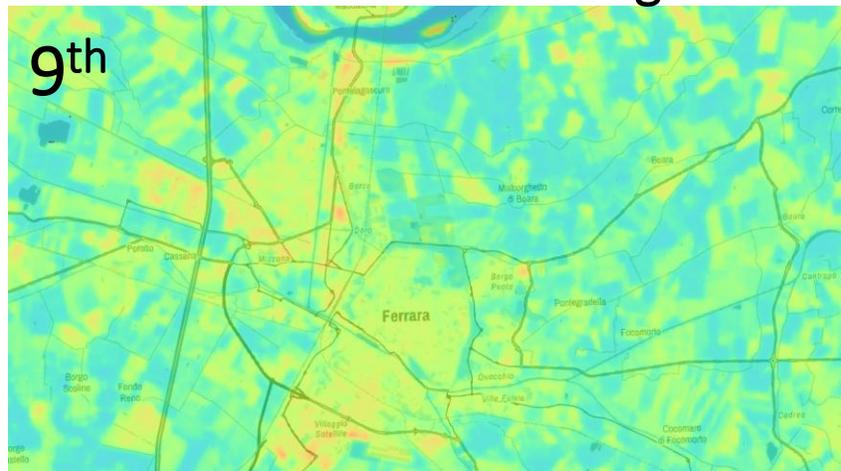
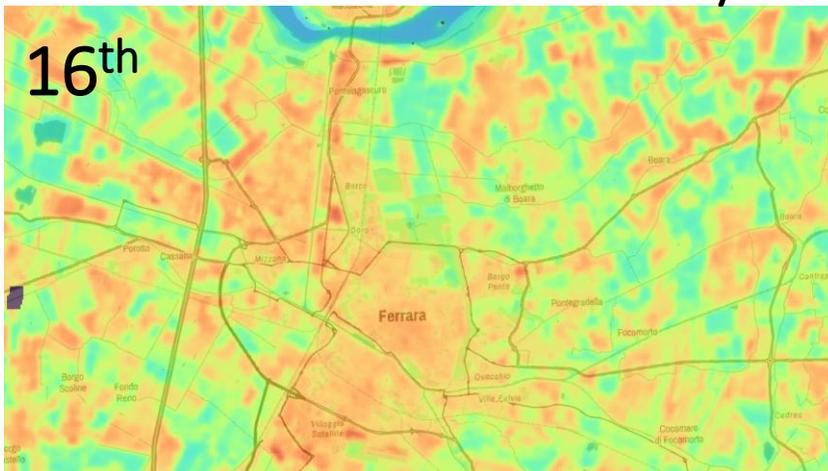
16th

9th

30th

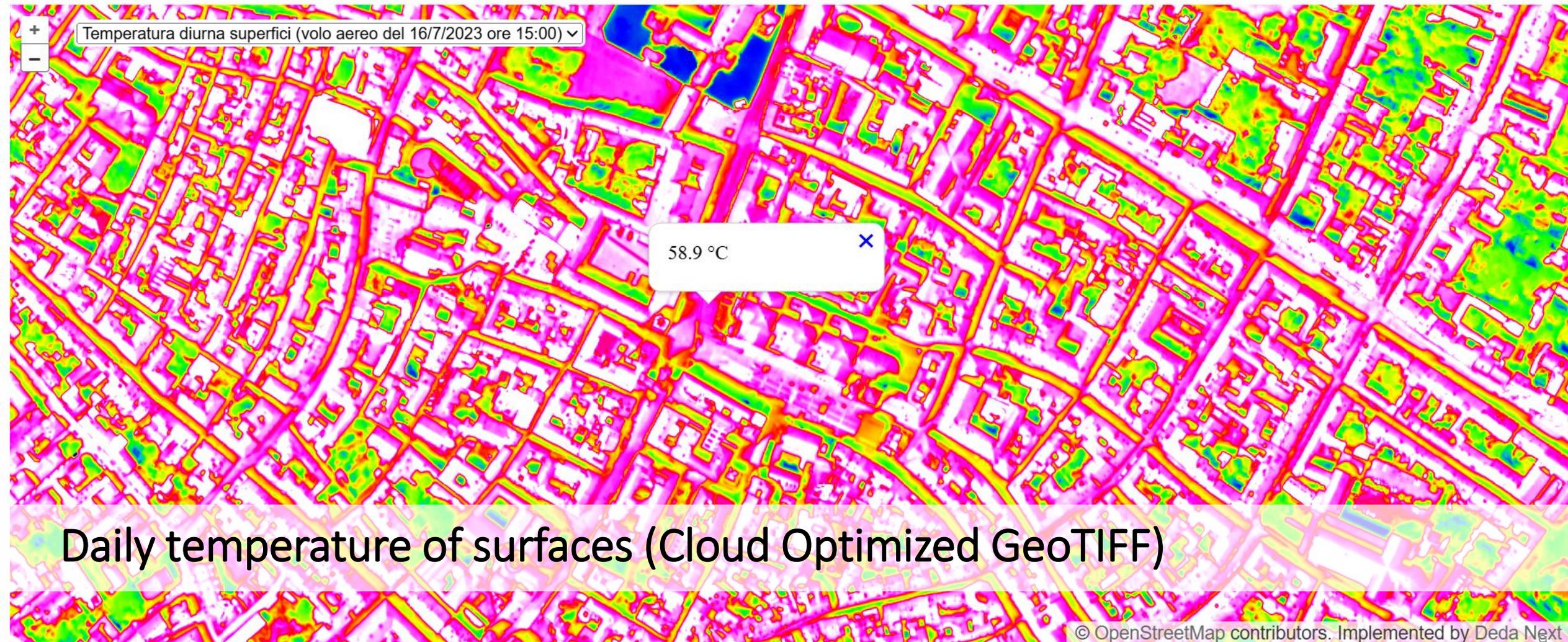
24th

25th



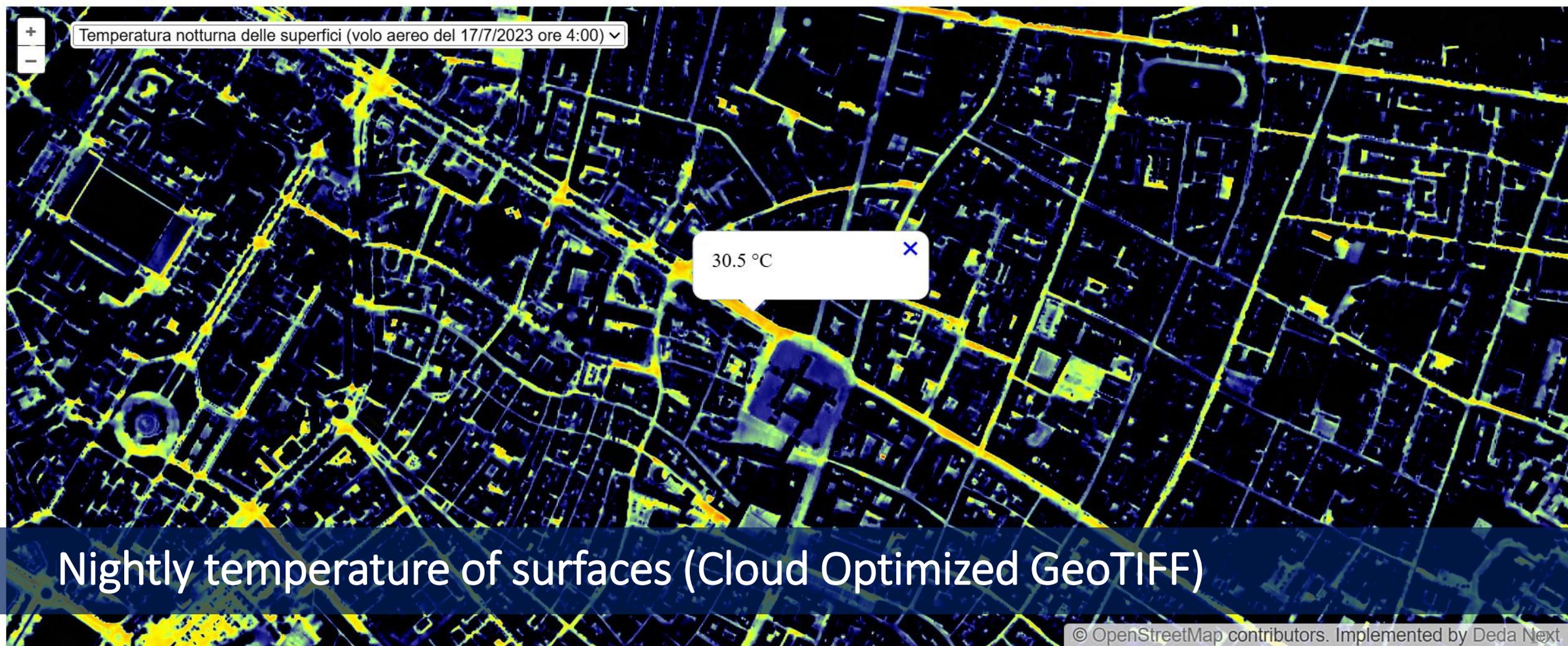
Thermal images from aerial flight

https://sit.comune.fe.it/allegati/mappe/usage/06_temperatura_diurna_superfici.html



Thermal images from aerial flight

https://sit.comune.fe.it/allegati/mappe/usage/05_temperatura_notturna_delle_superfici_17_07_2023.html



Hyperspectral image (+360 bands, 100 cm)





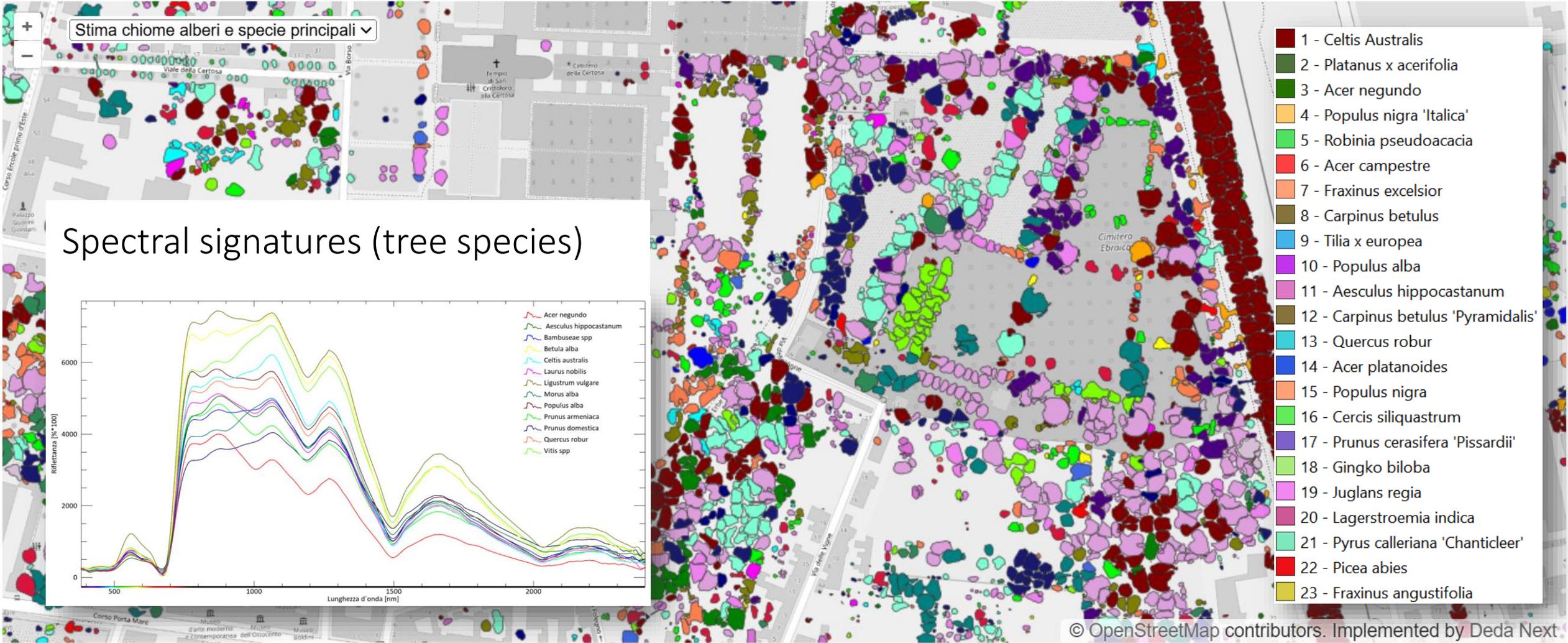
SPECTRAL • VALUE

AVT Airborne Sensing Italia srl

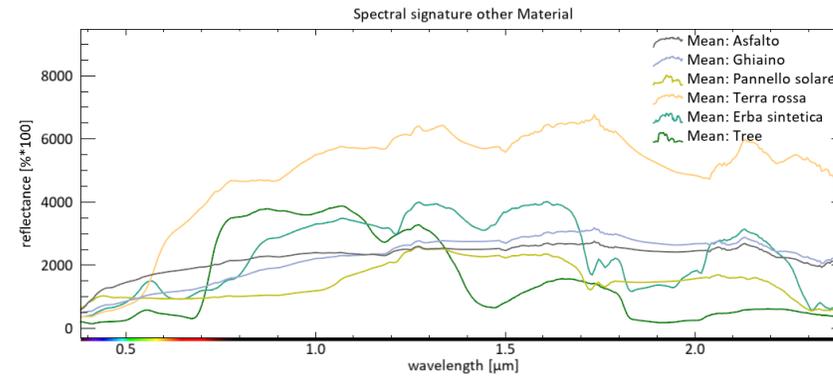


Points cloud → DSM in standard COG format (grid 100 cm)

Single tree canopy in public & private areas (DL + ML)



Spectral signatures (tree species)

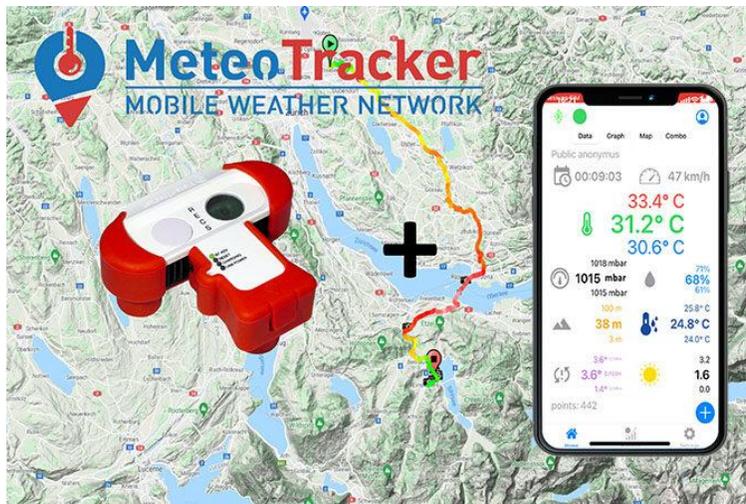


- Asfalto
- Bitume nero
- Cemento
- Ciottolato
- Erba sintetica
- Altro
- Ghiaino
- Guaina bianca
- Lastricato
- Metallo
- Pannello solare
- Porfido
- Tartan
- Tegola rossa
- Terra rossa
- Vetro
- Sabbia
- Suolo misto vegetazione
- Suolo nudo
- Prato
- Bassa vegetazione
- Alta vegetazione
- Acqua

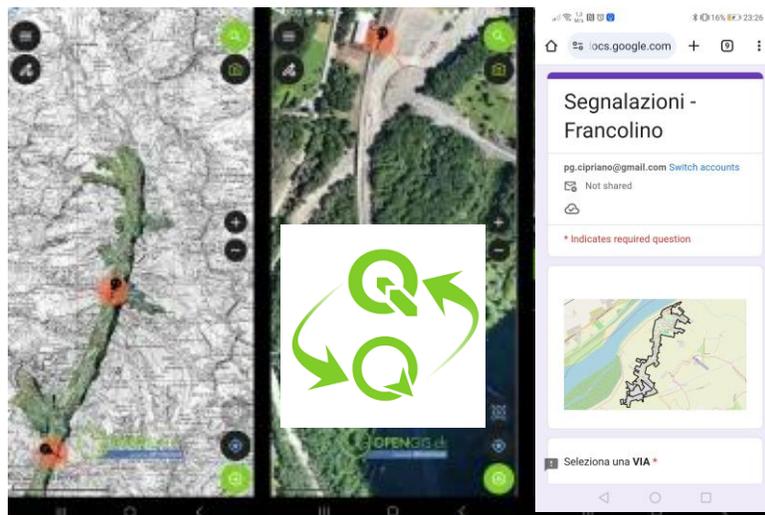
Materials of surfaces (1m resolution)

Citizen Science Ferrara

www.citizenscienceferrara.org



Air temperature measurements
(urban heat islands)



Crowd-mapping of flooded areas



Biodiversity census

With:

- Istituto tecnico 'Copernico'
- Istituto agrario 'Navarra'
- ITS TEC Ferrara
- Museo di Storia Naturale
- Fiumana APS
- Legambiente ER
- +200 single citizens

3rd main outcome

the deployment of
open software solutions
for data exploitation

The screenshot shows the GitHub profile for the USAGE organization. The header includes the GitHub logo, the organization name 'USAGEHub', and a 'Sign in' button. The main content area features the organization's logo, name 'USAGE', and description 'Urban Data Space for the Green Deal'. It also displays '4 followers', the website 'https://www.usage-project.eu/', and the email 'naomi.thiru@kuleuven.be'. A navigation bar includes 'Overview' (selected), 'Repositories' (11), 'Projects', 'Packages', and 'People'. The 'Pinned' section lists five repositories: 'CS_floods' (Public), 'LST_hot_spots' (Public) with JavaScript, 'PV-DL_detection' (Public) with Python, 'PV_roof_segmentation' (Public), and 'PV_surface_irradiation' (Public). The 'People' section states that the organization has no public members. The 'Top languages' section lists Python, Shell, JavaScript, and Jupyter Notebook.

USAGEHub

USAGE
Urban Data Space for the Green Deal

4 followers <https://www.usage-project.eu/> naomi.thiru@kuleuven.be

Overview Repositories 11 Projects Packages People

Pinned

- CS_floods Public
- LST_hot_spots Public
JavaScript
- PV-DL_detection Public
Python
- PV_roof_segmentation Public
- PV_surface_irradiation Public

People

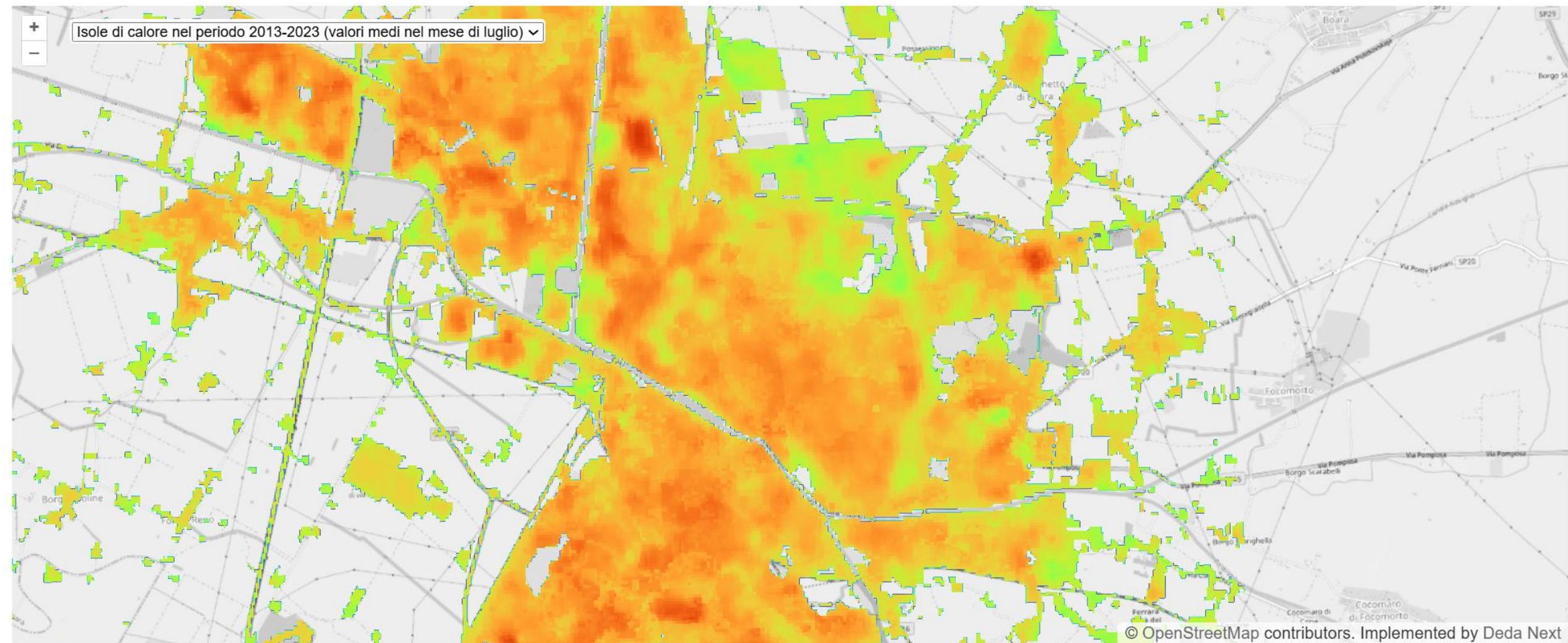
This organization has no public members. You must be a member to see who's a part of this organization.

Top languages

- Python
- Shell
- JavaScript
- Jupyter Notebook

Spatio-temporal analysis (2013-2023 – monthly)

https://sit.comune.fe.it/allegati/mappe/usage/07_isole_di_calore_nel_periodo_2013_2023.html



Solar potential of buildings' roofs

https://sit.comune.fe.it/allegati/mappe/usage/10_potenziale_di_irraggiamento_solare_edifici.html



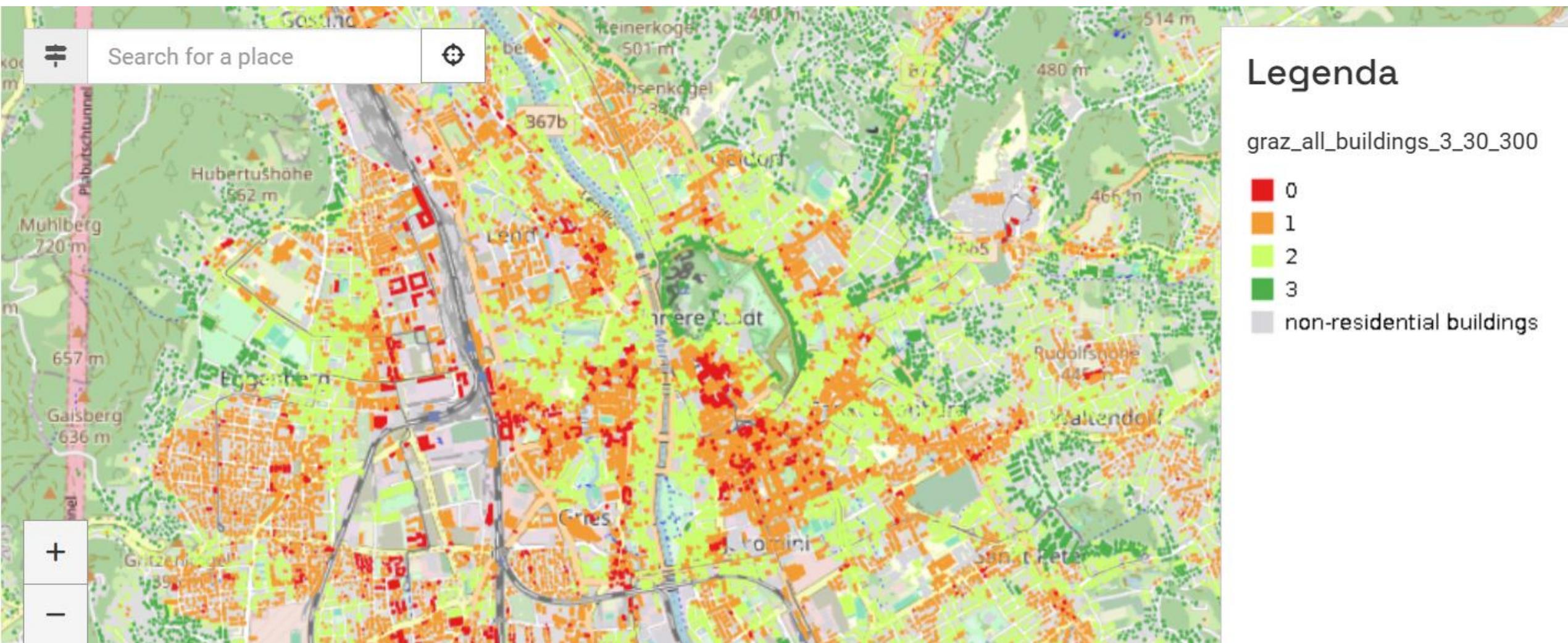
Simulation 'PMI' area (industrial)

South-facing roofs with no restrictions & no solar panels installed

- total area: 340K m²
- annual solar potential: 560K MWh

Building footprints with 3-30-300 classification

<https://usage.geocat.live/catalogue/srv/ita/catalog.search#/metadata/c35095df-b407-4050-8c42-89e0c24e1104>



Thank you

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